

Figure 1

LF native DNA sequence

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1 atgaatataa aaaaagaatt tataaaagta attagtatgt catgtttagt aacagcaatt
61 acttttgagt gtcccgctctt tatccccctt gtacaggggg cgggcggtca tggatgatgta
121 ggtatgcacg taaaagagaa agagaaaaat aaagatgaga ataagagaaa agatgaagaa
181 cgaaataaaa cacaggaaga gcattttaag gaaatcatga aacacattgt aaaaatagaa
241 gtaaaagggg aggaagctgt taaaaaagag gcagcagaaa agctacttga gaaagtacca
301 tctgatgttt tagagatgta taaagcaatt ggaggaaaga tatatatattg ggaatggatgat
361 attacaaaac atatatcttt agaagcatta tctgaagata agaaaaaat aaaagacatt
421 tatgggaaag atgcttttatt acatgaacat tatgtatatg caaaagaagg atatgaaccc
481 gtacttgtaa tccaatcttc ggaagattat gtagaaaata ctgaaaaggc actgaacggt
541 tattatgaaa taggtaagat attatcaagg gatatttttaa gtaaaattaa tcaaccatat
601 cagaaatddd tagatgtatt aaataccatt aaaaatgcat ctgattcaga tggacaagat
661 cttttattda ctaatcagct taaggaacat cccacagact tttctgtaga attcttggaa
721 caaaatagca atgaggtaca agaagtattd gcgaaagctt ttgcatatta tatcgagcca
781 cagcatcgtg atgtttttaca gctttatgca ccggaagctt ttaattacat ggataaattt
841 aacgaacaag aaataaatct atccttgtaa gaacttaaa atcaacggat gctgtcaaga
901 tatgaaaaat gggaaaaagat aaaacagcac tatcaacact ggagcgattc tttatctgaa
961 gaaggaagag gactttttaa aaagctgcag attcctattg agccaaagaa agatgcacata
1021 attcattctt tatctcaaga agaaaaagag cttctaaaaa gaatacaaat tgatagtagt
1081 gattttttat ctactgagga aaaagagttt ttaaaaaagc tacaaattga tattcgtgat
1141 tctttatctg aagaagaaaa agagctttta aatagaatac aggtggatag tagtaatcct
1201 ttatctgaaa aagaaaaaga gtttttaaaa aagctgaaac ttgatattca accatatgat
1261 attaatacaa gggtgcaaga tacaggaggg ttaattgata gtccgtcaat taatcttgat
1321 gtaagaaagc agtataaaaag ggatattcaa aatattgatg ctttattaca tcaatccatt
1381 ggaagtacct tgtacaataa aattttatttg tatgaaaata tgaatatcaa taaccttaca
1441 gcaaccctag gtgoggattt agttgattcc actgataata ctaaaattaa tagaggtatt
1501 ttcaatgaat tcaaaaaaaaa tttcaaatat agtatttcta gtaactatat gattgttgat
1561 ataaatgaaa ggcctgcatt agataatgag cgtttgaaat ggagaatcca attatcacca
1621 gatactcgag caggatattt agaaaaatgga aagcttatat tacaaagaaa catcgggtctg
1681 gaaataaagg atgtacaaat aattaagcaa tccgaaaaag aatatataag gattgatgag
1741 aaagtagtgc caaagagtaa aatagataca aaaattcaag aagcacagtt aaatataaat
1801 caggaatgga ataaagcatt agggttacca aaatatacaa agcttattac attcaacgtg
1861 cataatagat atgcatccaa tattgtagaa agtgcttatt taatattgaa tgaatggaaa
1921 aataatattc aaagtgatct tataaaaaag gtaacaaatt acttagttga tggtaatgga
1981 agatttggtt ttaccgatat tactctccct aatatagctg aacaatatac acatcaagat
2041 gagatatatg agcaagttca ttcaaaaggg ttatatgttc cagaatcccg ttctatatta
2101 ctccatggac cttcaaaagg tgtagaatta aggaatgata gtgagggttt tatacacgaa
2161 tttggacatg ctgtggatga ttatgctgga tatctattag ataagaacca atctgattta
2221 gttacaaatt ctaaaaaatt cattgatatt tttaaggaag aaggagtaa tttacttcg
2281 tatgggagaa caaatgaagc ggaatttttt gcagaagcct ttaggttaat gcattctacg
2341 gaccatgctg aacgttttaa agttcaaaaa aatgctccga aaactttcca atttattaac
2401 gatcagatta agttcattat taactcataa

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Coding sequence: 1-2430

Signal peptide: 1-99

Mature peptide: 100-2430

LF4 peptide: 124-855

Figure 1 Continued

Amino acid sequence for LF mature peptide (missing the signal sequence)

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1 agghgdvgmh vkekeknkde nkrkdeernk tqeehlkeim khivkievkg eeavkkeaae
61 kllekvpsdv lemykaiggk iyivdgditk hislealsed kkkikdiygk dallhehyvy
121 akegyepvlv iqssedyven tekalnvyve igkilsrdil skinqpyqkf ldvltikna
181 sdsdgqdllf tnqlkehptd fsvefleqns nevqevfaka fayyiepqhr dvlqlyapea
241 fnymdkfneq einlsleelk dqrmlsryek wekikqhyqh wsdslseegr gllkklqipi
301 epkkddihs lsqeekekllk rigidssdfl steekeflkk lqidirdsls eeekeklnri
361 qvdssnplse kekeflkklk ldiqpyding rlqdtggld spsinldvrk qykrdignid
421 allhqsigst lynkiylyen mninnltatl gadlvdstdn tkinrgifne fknkfkysis
481 snymivdine rpaldnerlk wriqlspdtr agylengkli lqrnigleik dvqiikqsek
541 eyiridakvv pkskidtkiq eaqlningew nkalglpkyt klitfnvhnr yasnivesay
601 lilnewknni qsdlikkvtv ylvdgngfrv ftditlpnia eqythqdeiy eqvhskglyv
661 pesrsillhg pskgvelrnd segfihefgh avddyagyll dknqsdlvtv skkfifidike
721 egslntsygr tneaeffaea frlmhstdha erlkvqknap ktfqfindqi kfiins

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Amino acid sequence for LF4 (amino acids 9-252 from above sequence)

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9          mh vkekeknkde nkrkdeernk tqeehlkeim khivkievkg eeavkkeaae
61 kllekvpsdv lemykaiggk iyivdgditk hislealsed kkkikdiygk dallhehyvy
121 akegyepvlv iqssedyven tekalnvyve igkilsrdil skinqpyqkf ldvltikna
181 sdsdgqdllf tnqlkehptd fsvefleqns nevqevfaka fayyiepqhr dvlqlyapea
241 fnymdkfneq ei

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Figure 2

PA native DNA sequence

ORIGIN

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1  atgaaaaaac gaaaagtgtt aataccatta atggcattgt ctacgatatt agtttcaagc
61  acaggtaatt tagaggatgat tcaggcagaa gttaaacagg agaaccggtt attaaatgaa
121 tcagaatcaa gttcccaggg gttactagga tactatttta gtgatttgaa ttttcaagca
181 cccatggtgg ttacctcttc tactacaggg gatttatcta ttctagttc tgagttagaa
241 aatattccat cggaaaacca atattttcaa tctgctatct ggtcaggatt tatcaaagtt
301 aagaagagtg atgaatatac atttgctact tccgctgata atcatgtaac aatgtgggta
361 gatgaccaag aagtgattaa taaagcttct aattctaaca aaatcagatt agaaaaagga
421 agattatata aaataaaaaa tcaatatcaa cgagaaaatc ctactgaaaa aggattggat
481 ttcaagttgt actggaccga ttctcaaaat aaaaaagaag tgatttctag tgataactta
541 caattgccag aattaaaaca aaaatcttcg aactcaagaa aaaagcgaag tacaagtgct
601 ggacctacgg ttccagaccg tgacaatgat ggaatccctg attcattaga ggtagaagga
661 tatacggttg atgtcaaaaa taaaagaact tttctttcac catggatttc taatattcat
721 gaaaagaaag gattaaccaa atataaatca tctcctgaaa aatggagcac ggcttctgat
781 ccgtacagtg atttcgaaaa ggttacagga cggattgata agaatgtaac accagaggca
841 agacaccccc ttgtggcagc ttatccgatt gtacatgtag atatggagaa tattattctc
901 tcaaaaaatg aggatcaatc cacacagaat actgatagtg aaacgagAAC aataagtaaa
961 aatacttcta caagtaggac acatactagt gaagtacatg gaaatgcaga agtgcatgcg
1021 tcgttctttg atattgggtg gagtgtatct gcaggattta gtaattcgaa ttcaagtacg
1081 gtcgcaattg atcattcact atctctagca ggggaaagaa cttgggctga aacaatgggt
1141 ttaaataccg ctgatacagc aagattaaat gccaatatta gatatgtaaa tactgggacg
1201 gctocaaatc acaacgtgtt accaacgact tcgttagtgt taggaaaaaa tcaaacactc
1261 gcgacaatta aagctaagga aaaccaatta agtcaaatac ttgcacctaa taattattat
1321 ccttctaaaa acttggcgcc aatcgcataa aatgcacaag acgatttcag ttctactoca
1381 attacaatga attacaatca atttcttgag ttagaaaaaa cgaaacaatt aagattagat
1441 acggatcaag tatatgggaa tatagcaaca tacaattttg aaatgggaag agtgagggtg
1501 gatacaggct cgaactggag tgaagtgtta ccgcaaattc aagaaacaac tgcacgtatc
1561 atttttaatg gaaaagattt aaatctggta gaaaggcgga tagcggcggt taatcctagt
1621 gatccattag aaacgactaa accggatatg acattaaaag aagcccttaa aatagcattt
1681 ggatttaacg aaccgaatgg aaacttacaa tatcaaggga aagacataac cgaatttgat
1741 tttaatttcg atcaacaaac atctcaaaat atcaagaatc agttagcgga attaaacgca
1801 actaacatat atactgtatt agataaaatc aaattaaatg caaaaatgaa tattttaata
1861 agagataaac gttttcatta tgatagaaat aacatagcag ttggggcgga tgagtcagta
1921 gttaaggagg ctcatagaga agtaattaat tcgtcaacag agggattatt gttaaattat
1981 gataaggata taagaaaaat attatcaggt tatattgtag aaattgaaga tactgaaggg
2041 cttaaagaag ttataaatga cagatatgat atgttgaata tttctagttt acggcaagat
2101 ggaaaaacat ttatagattt taaaaaatat aatgataaat taccgttata tataagtaat
2161 cccaattata aggtaaatgt atatgctgtt actaaagaaa acactattat taatcctagt
2221 gagaatgggg atactagtac caacgggatc aagaaaattt taatcttttc taaaaaaggc
2281 tatgagatag gataa

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Coding sequence: 1-2295

Signal peptide: 1-87

Mature peptide: 88-2295

pCPA: 610-2295

Figure 2 continued

Amino acid sequence for PA mature peptide (missing the signal sequence)

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1 evkqenrlln esesssqgll gyyfsdlnfq apmvvtsstt gdlsipssel enipsengyf
61 qsaiwsgfik vkksdeytfa tsadnhvtmw vddqevinka snsikirlek grlyqikiqy
121 qrenptekgl dfklywtdsq nkkevisssn lqlpelkqks snsrkkrstg agptvpdrdn
181 dgipdsleve gytvdvknkr tflspwisni hekkgltkyk sspekwtas dpysdfekvt
241 gridknvspe arhplvaayp ivhvdmenii lsknedqstq ntdsetrtis kntstsrtht
301 sevhgnaevh asffdiggsv sagfsnsnss tvaidhsisl agertwaetm glntadtarl
361 naniryvntg tapiynvlpt tslvlgknqt latikakenq lsqilapnny ypsknlapia
421 lnaqddfsst pitmynyqfl elektkqlrl dtdqvygnia tynfengrvr vdtgsnwsev
481 lpqigettar iifngkdlnl verriaavnp sdplettkpd mtlkealkia fgfnepngnl
541 qyqgkditef dfnfdqqtsg niknqlaeln atniyvtldk iklnakmnil irdkrfhydr
601 nniavgades vvkeahrevi nsstegllln idkdirkils gyiveiedte glkevindry
661 dmlnisslrq dgktfidfkk yndklplyis npnykvnvya vtkentiinp sengdtstng
721 ikkilifskk gyeig

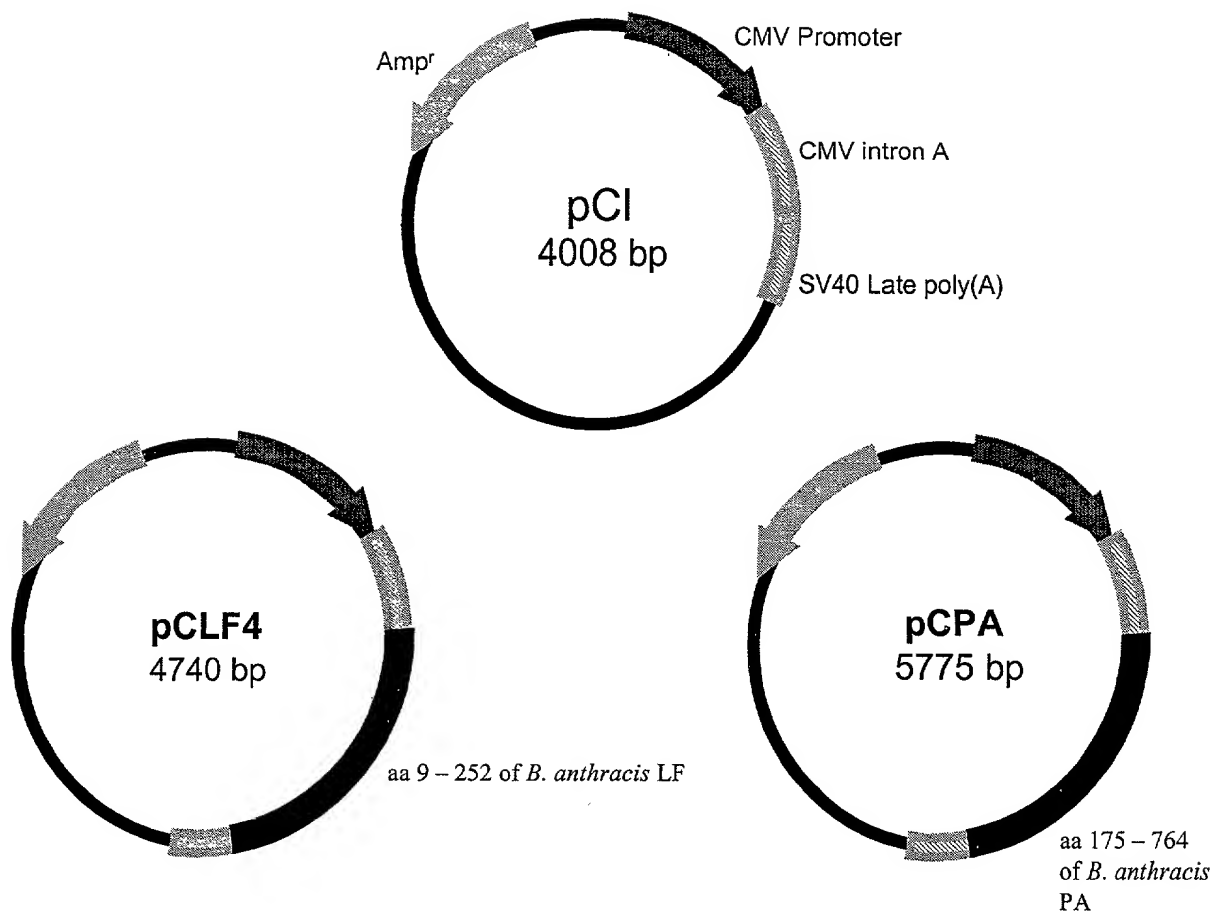
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Amino acid sequence for pCPA (amino acids 175-735 from above sequence)

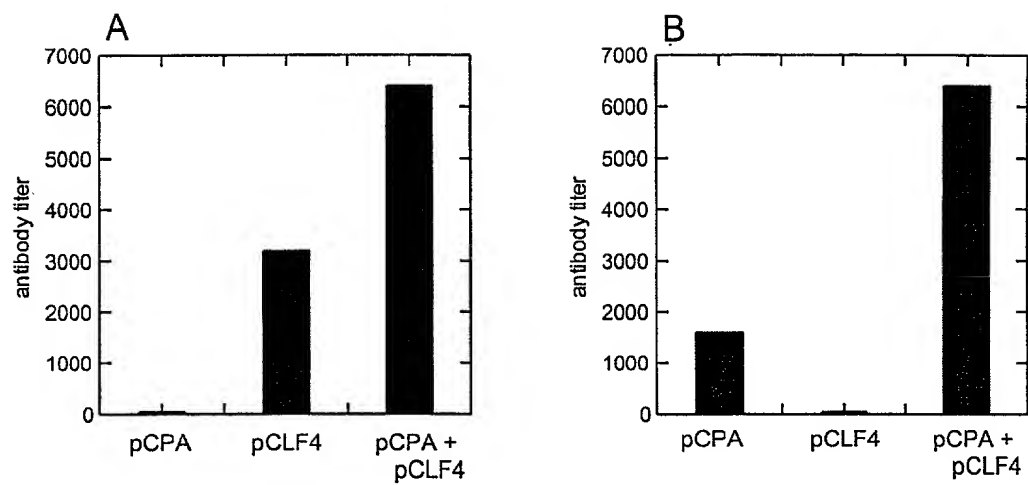
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175                                     vpdrdn
181 dgipdsleve gytvdvknkr tflspwisni hekkgltkyk sspekwtas dpysdfekvt
241 gridknvspe arhplvaayp ivhvdmenii lsknedqstq ntdsetrtis kntstsrtht
301 sevhgnaevh asffdiggsv sagfsnsnss tvaidhsisl agertwaetm glntadtarl
361 naniryvntg tapiynvlpt tslvlgknqt latikakenq lsqilapnny ypsknlapia
421 lnaqddfsst pitmynyqfl elektkqlrl dtdqvygnia tynfengrvr vdtgsnwsev
481 lpqigettar iifngkdlnl verriaavnp sdplettkpd mtlkealkia fgfnepngnl
541 qyqgkditef dfnfdqqtsg niknqlaeln atniyvtldk iklnakmnil irdkrfhydr
601 nniavgades vvkeahrevi nsstegllln idkdirkils gyiveiedte glkevindry
661 dmlnisslrq dgktfidfkk yndklplyis npnykvnvya vtkentiinp sengdtstng
721 ikkilifskk gyeig

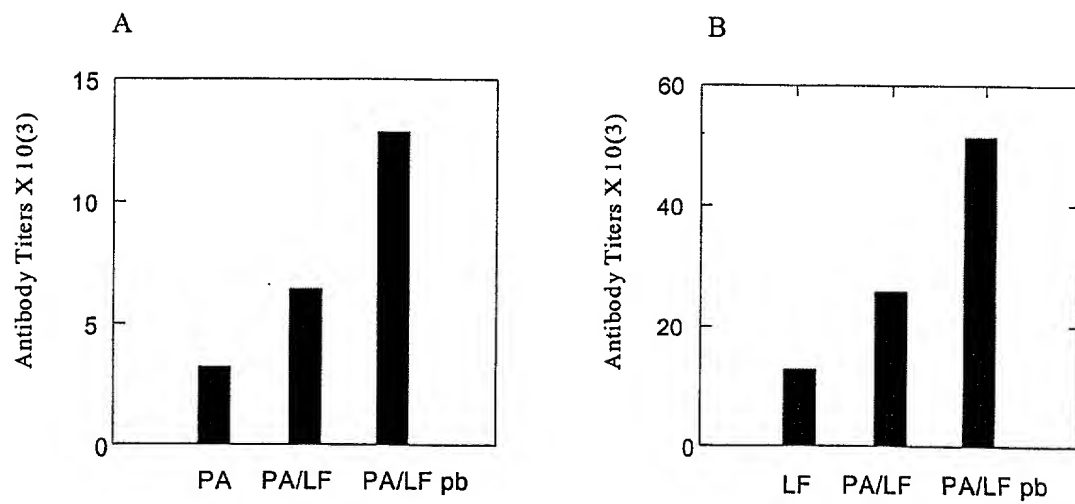
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**Fig. 3**



**Fig. 4**



**Fig. 5**

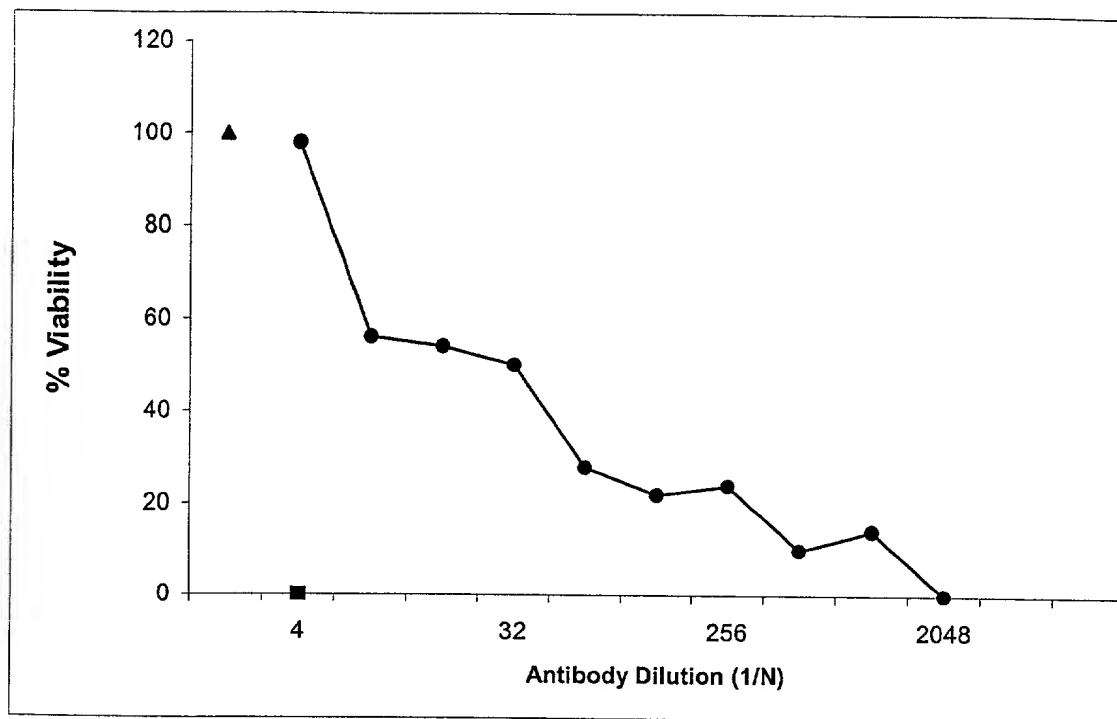


Fig. 6